

# SEQUENCE LISTING

<110> Procter & Gamble Company  
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<120> Human protein-tyrosine phosphatase beta (HPTPbeta) as a target in  
treatment of angiogenesis mediated disorders

<130> 9045M

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<160> 17

<170> PatentIn version 3.2

<210> 1

<211> 6075

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (31)..(6024)

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Ile Leu Pro Tyr Asp Ala Thr Arg Val Lys Leu Ser Asn Val Asp	
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gat gat cct tgc tct gac tac atc aat gcc agc tac atc cct ggc	5325
Asp Asp Pro Cys Ser Asp Tyr Ile Asn Ala Ser Tyr Ile Pro Gly	
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Gly Thr Lys Asp Asp Phe Trp Lys Met Val Trp Glu Gln Asn Val	
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His Asn Ile Val Met Val Thr Gln Cys Val Glu Lys Gly Arg Val	
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Lys Cys Asp His Tyr Trp Pro Ala Asp Gln Asp Ser Leu Tyr Tyr	
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Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser Val Leu Pro Glu	
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Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu Gln Leu Asp	
1845 1850 1855	
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Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp Pro Asp	
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His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val Arg	
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Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr	
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Val Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe Ile	
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Ala Leu Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val	
1920 1925 1930	
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Asp Ile Tyr Gly Ala Val His Asp Leu Arg Leu His Arg Val His	
1935 1940 1945	
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Met Val Gln Thr Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val	
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Arg Asp Val Leu Arg Ala Arg Lys Leu Arg Ser Glu Gln Glu Asn	
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Pro Leu Phe Pro Ile Tyr Glu Asn Val Asn Pro Glu Tyr His Arg	
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Glu Ser Lys Ala Ser Ser His Ser Val Ser Ile Gln Trp Arg Ile Leu  
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Gly Ser Pro Cys Asn Phe Ser Leu Ile Tyr Ser Ser Asp Thr Leu Gly  
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Ala Ala Leu Cys Pro Thr Phe Arg Ile Asp Asn Thr Thr Tyr Gly Cys  
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Asn Leu Gln Asp Leu Gln Ala Gly Thr Ile Tyr Asn Phe Lys Ile Ile  
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Ser Leu Asp Glu Glu Arg Thr Val Val Leu Gln Thr Asp Pro Leu Pro  
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Pro Ala Arg Phe Gly Val Ser Lys Glu Lys Thr Thr Ser Thr Gly Leu  
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His Val Trp Trp Thr Pro Ser Ser Gly Lys Val Thr Ser Tyr Glu Val  
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Gln Leu Phe Asp Glu Asn Asn Gln Lys Ile Gln Gly Val Gln Ile Gln  
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Glu Ser Thr Ser Trp Asn Glu Tyr Thr Phe Phe Asn Leu Thr Ala Gly  
165 170 175

Ser Lys Tyr Asn Ile Ala Ile Thr Ala Val Ser Gly Gly Lys Arg Ser  
180 185 190

Phe Ser Val Tyr Thr Asn Gly Ser Thr Val Pro Ser Pro Val Lys Asp  
195 200 205

Ile Gly Ile Ser Thr Lys Ala Asn Ser Leu Leu Ile Ser Trp Ser His  
210 215 220

Gly Ser Gly Asn Val Glu Arg Tyr Arg Leu Met Leu Met Asp Lys Gly  
225 230 235 240

Ile Leu Val His Gly Gly Val Val Asp Lys His Ala Thr Ser Tyr Ala  
245 250 255

Phe His Gly Leu Ser Pro Gly Tyr Leu Tyr Asn Leu Thr Val Met Thr  
260 265 270

Glu Ala Ala Gly Leu Gln Asn Tyr Arg Trp Lys Leu Val Arg Thr Ala  
275 280 285

Pro Met Glu Val Ser Asn Leu Lys Val Thr Asn Asp Gly Ser Leu Thr  
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Ser Leu Lys Val Lys Trp Gln Arg Pro Pro Gly Asn Val Asp Ser Tyr  
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Asn Ile Thr Leu Ser His Lys Gly Thr Ile Lys Glu Ser Arg Val Leu  
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Ala Pro Trp Ile Thr Glu Thr His Phe Lys Glu Leu Val Pro Gly Arg  
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Leu Tyr Gln Val Thr Val Ser Cys Val Ser Gly Glu Leu Ser Ala Gln  
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Lys Met Ala Val Gly Arg Thr Phe Pro Asp Lys Val Ala Asn Leu Glu  
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Ala Asn Asn Asn Gly Arg Met Arg Ser Leu Val Val Ser Trp Ser Pro  
385 390 395 400

Pro Ala Gly Asp Trp Glu Gln Tyr Arg Ile Leu Leu Phe Asn Asp Ser  
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Val Val Leu Leu Asn Ile Thr Val Gly Lys Glu Glu Thr Gln Tyr Val  
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Met Asp Asp Thr Gly Leu Val Pro Gly Arg Gln Tyr Glu Val Glu Val



Val Ile Ala Lys Ser Val Arg Glu Cys Ser Phe Ser Ser Leu Thr Pro  
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Gly Arg Leu Tyr Thr Val Thr Ile Thr Thr Arg Ser Gly Lys Tyr Glu  
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Asn His Ser Phe Ser Gln Glu Arg Thr Val Pro Asp Lys Val Gln Gly  
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Val Ser Val Ser Asn Ser Ala Arg Ser Asp Tyr Leu Arg Val Ser Trp  
740 745 750

Val His Ala Thr Gly Asp Phe Asp His Tyr Glu Val Thr Ile Lys Asn  
755 760 765

Lys Asn Asn Phe Ile Gln Thr Lys Ser Ile Pro Lys Ser Glu Asn Glu  
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Cys Val Phe Val Gln Leu Val Pro Gly Arg Leu Tyr Ser Val Thr Val  
785 790 795 800

Thr Thr Lys Ser Gly Gln Tyr Glu Ala Asn Glu Gln Gly Asn Gly Arg  
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Thr Ile Pro Glu Pro Val Lys Asp Leu Thr Leu Arg Asn Arg Ser Thr  
820 825 830

Glu Asp Leu His Val Thr Trp Ser Gly Ala Asn Gly Asp Val Asp Gln  
835 840 845

Tyr Glu Ile Gln Leu Leu Phe Asn Asp Met Lys Val Phe Pro Pro Phe  
850 855 860

His Leu Val Asn Thr Ala Thr Glu Tyr Arg Phe Thr Ser Leu Thr Pro  
865 870 875 880

Gly Arg Gln Tyr Lys Ile Leu Val Leu Thr Ile Ser Gly Asp Val Gln  
885 890 895

Gln Ser Ala Phe Ile Glu Gly Phe Thr Val Pro Ser Ala Val Lys Asn  
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Ile His Ile Ser Pro Asn Gly Ala Thr Asp Ser Leu Thr Val Asn Trp  
915 920 925

Thr Pro Gly Gly Gly Asp Val Asp Ser Tyr Thr Val Ser Ala Phe Arg  
 930 935 940

His Ser Gln Lys Val Asp Ser Gln Thr Ile Pro Lys His Val Phe Glu  
 945 950 955 960

His Thr Phe His Arg Leu Glu Ala Gly Glu Gln Tyr Gln Ile Met Ile  
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Ala Ser Val Ser Gly Ser Leu Lys Asn Gln Ile Asn Val Val Gly Arg  
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Thr Val Pro Ala Ser Val Gln Gly Val Ile Ala Asp Asn Ala Tyr Ser  
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Ser Tyr Ser Leu Ile Val Ser Trp Gln Lys Ala Ala Gly Val Ala  
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Glu Arg Tyr Asp Ile Leu Leu Leu Thr Glu Asn Gly Ile Leu Leu  
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Arg Asn Thr Ser Glu Pro Ala Thr Thr Lys Gln His Lys Phe Glu  
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Asp Leu Thr Pro Gly Lys Lys Tyr Lys Ile Gln Ile Leu Thr Val  
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Ser Gly Gly Leu Phe Ser Lys Glu Ala Gln Thr Glu Gly Arg Thr  
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Val Pro Ala Ala Val Thr Asp Leu Arg Ile Thr Glu Asn Ser Thr  
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Arg His Leu Ser Phe Arg Trp Thr Ala Ser Glu Gly Glu Leu Ser  
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Trp Tyr Asn Ile Phe Leu Tyr Asn Pro Asp Gly Asn Leu Gln Glu  
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Arg Ala Gln Val Asp Pro Leu Val Gln Ser Phe Ser Phe Gln Asn  
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Leu Leu Gln Gly Arg Met Tyr Lys Met Val Ile Val Thr His Ser  
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Pro	Gly	Arg	Lys	Tyr	Val	Leu	Trp	Val	Val	Thr	His	Ser	Gly	Asp
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Glu	Leu	Gln	Trp	Leu	Pro	Arg	Asp	Ala	Leu	Thr	Val	Phe	Asn	Pro
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Ser	Ala 1430	Gly	Met	Thr	Ser	Glu 1435	Val	Val	Glu	Asp	Ser 1440	Thr	Ile	Thr
Met	Ile 1445	Asp	Arg	Pro	Pro	Pro 1450	Pro	Pro	Pro	His	Ile 1455	Arg	Val	Asn
Glu	Lys 1460	Asp	Val	Leu	Ile	Ser 1465	Lys	Ser	Ser	Ile	Asn 1470	Phe	Thr	Val
Asn	Cys 1475	Ser	Trp	Phe	Ser	Asp 1480	Thr	Asn	Gly	Ala	Val 1485	Lys	Tyr	Phe
Thr	Val 1490	Val	Val	Arg	Glu	Ala 1495	Asp	Gly	Ser	Asp	Glu 1500	Leu	Lys	Pro
Glu	Gln 1505	Gln	His	Pro	Leu	Pro 1510	Ser	Tyr	Leu	Glu	Tyr 1515	Arg	His	Asn
Ala	Ser 1520	Ile	Arg	Val	Tyr	Gln 1525	Thr	Asn	Tyr	Phe	Ala 1530	Ser	Lys	Cys
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Glu	Phe 1595	Thr	Lys	Pro	Leu	Tyr 1600	Ser	Asp	Thr	Phe	Phe 1605	Ser	Leu	Pro
Ile	Thr 1610	Thr	Glu	Ser	Glu	Pro 1615	Leu	Phe	Gly	Ala	Ile 1620	Glu	Gly	Val



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Met	Val	Trp	Glu	Gln	Asn	Val	His	Asn	Ile	Val	Met	Val	Thr	Gln
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Cys	Val	Glu	Lys	Gly	Arg	Val	Lys	Cys	Asp	His	Tyr	Trp	Pro	Ala
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Cys Gly Glu Glu Gln Leu Asp Ala His Arg Leu Ile Arg His Phe  
1850 1855 1860

His Tyr Thr Val Trp Pro Asp His Gly Val Pro Glu Thr Thr Gln  
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Ser Leu Ile Gln Phe Val Arg Thr Val Arg Asp Tyr Ile Asn Arg  
1880 1885 1890

Ser Pro Gly Ala Gly Pro Thr Val Val His Cys Ser Ala Gly Val  
1895 1900 1905

Gly Arg Thr Gly Thr Phe Ile Ala Leu Asp Arg Ile Leu Gln Gln  
1910 1915 1920

Leu Asp Ser Lys Asp Ser Val Asp Ile Tyr Gly Ala Val His Asp  
1925 1930 1935

Leu Arg Leu His Arg Val His Met Val Gln Thr Glu Cys Gln Tyr  
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Val Tyr Leu His Gln Cys Val Arg Asp Val Leu Arg Ala Arg Lys  
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Thr Ser Glu Val Val Glu Asp Ser Thr Ile Thr Met Ile Asp Arg Pro  
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Phe	Ala	Ser	Lys	Cys	Ala	Glu	Ser	Pro	Asp	Ser	Ser	Ser	Lys	Ser	Phe		
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Pro	Ser	Gln	Gln	Lys	Phe	Cys	Asp	Gly	Pro	Leu	Leu	Pro	His	Thr	Ala		
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Tyr	Arg	Ile	Ser	Ile	Arg	Ala	Phe	Thr	Gln	Leu	Phe	Asp	Glu	Asp	Leu		
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Lys	Glu	Phe	Thr	Lys	Pro	Leu	Tyr	Ser	Asp	Thr	Phe	Phe	Ser	Met	Pro		
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cac atg gtc cag acc gag tgt caa tat gtg tat ctg cat cag tgt gta 1633  
 His Met Val Gln Thr Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val  
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aga gac gtc tca gag caa aga aac tgc gga aac gag caa gag aaa ggg 1681  
 Arg Asp Val Ser Glu Gln Arg Asn Cys Gly Asn Glu Gln Glu Lys Gly  
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ggt gtt tcg att tat gag aat gtg aat cag agt atc aca gag atg caa 1729  
 Gly Val Ser Ile Tyr Glu Asn Val Asn Gln Ser Ile Thr Glu Met Gln  
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 Ser Thr Arg Asp Ile Lys Asn  
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 35 40 45

Ser Lys Ser Ser Ile Asn Phe Thr Val Asn Cys Ser Trp Phe Ser Asp  
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Thr Asn Gly Ala Val Gly Tyr Phe Ala Val Val Val Arg Glu Ala Asp  
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Ser Met Asp Glu Leu Lys Pro Glu Gln Gln His Pro Leu Pro Ser Tyr  
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Leu Glu Tyr Arg His Asn Ala Ser Ile Arg Val Tyr Gln Thr Asn Tyr  
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Phe Ala Ser Lys Cys Ala Glu Ser Pro Asp Ser Ser Ser Lys Ser Phe  
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Asn Ile Lys Leu Gly Ala Glu Met Asp Ser Leu Gly Gly Lys Cys Asp  
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Pro Ser Gln Gln Lys Phe Cys Asp Gly Pro Leu Leu Pro His Thr Ala  
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Tyr Arg Ile Ser Ile Arg Ala Phe Thr Gln Leu Phe Asp Glu Asp Leu  
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Lys Glu Phe Thr Lys Pro Leu Tyr Ser Asp Thr Phe Phe Ser Met Pro  
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Ile Thr Thr Glu Ser Glu Pro Leu Phe Gly Val Ile Glu Gly Val Ser  
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Ala Gly Leu Phe Leu Ile Gly Met Leu Val Ala Leu Val Ala Phe Phe  
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Ile Cys Arg Gln Lys Ala Ser His Ser Arg Glu Arg Pro Ser Ala Arg  
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Leu Ser Ile Arg Arg Asp Arg Pro Leu Ser Val His Leu Asn Leu Gly  
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Gln Lys Gly Asn Arg Lys Thr Ser Cys Pro Ile Lys Ile Asn Gln Phe  
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Glu Gly His Phe Met Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser  
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Lys Glu Tyr Glu Asp Leu Lys Asp Val Gly Arg Ser Gln Ser Cys Asp  
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Ile Ala Leu Leu Pro Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile  
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Leu Pro Tyr Asp Ala Ser Arg Val Lys Leu Ser Asn Val Asp Asp Asp  
325 330 335

Pro Cys Ser Asp Tyr Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn Phe  
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Arg Arg Glu Tyr Ile Ala Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp  
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Val Thr Gln Cys Val Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp



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acc cgg gcc gcc tct gtg ggt ttg cct agt gtt tct ctt gat ctg ccc	96
Thr Arg Ala Ala Ser Val Gly Leu Pro Ser Val Ser Leu Asp Leu Pro	
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agg ctc agc ata caa aaa gac ata ctt aca att aag gct aat aca act	144
Arg Leu Ser Ile Gln Lys Asp Ile Leu Thr Ile Lys Ala Asn Thr Thr	
35 40 45	
ctt caa att act tgc agg gga cag agg gac ttg gac tgg ctt tgg ccc	192
Leu Gln Ile Thr Cys Arg Gly Gln Arg Asp Leu Asp Trp Leu Trp Pro	
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Asn Asn Gln Ser Gly Ser Glu Gln Arg Val Glu Val Thr Glu Cys Ser	
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Asp Gly Leu Phe Cys Lys Thr Leu Thr Ile Pro Lys Val Ile Gly Asn	
85 90 95	
gac act gga gcc tac aag tgc ttc tac cgg gaa act gac ttg gcc tcg	336
Asp Thr Gly Ala Tyr Lys Cys Phe Tyr Arg Glu Thr Asp Leu Ala Ser	
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gtc att tat gtc tat gtt caa gat tac aga tct cca ttt att gct tct	384
Val Ile Tyr Val Tyr Val Gln Asp Tyr Arg Ser Pro Phe Ile Ala Ser	
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Val Ser Asp Gln His Gly Val Val Tyr Ile Thr Glu Asn Lys Asn Lys	
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act gtg gtg att cca tgt ctc ggg tcc att tca aat ctc aac gtg tca	480
Thr Val Val Ile Pro Cys Leu Gly Ser Ile Ser Asn Leu Asn Val Ser	
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Leu Cys Ala Arg Tyr Pro Glu Lys Arg Phe Val Pro Asp Gly Asn Arg	
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Ile Ser Trp Asp Ser Lys Lys Gly Phe Thr Ile Pro Ser Tyr Met Ile	
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Ser Tyr Ala Gly Met Val Phe Cys Glu Ala Lys Ile Asn Asp Glu Ser	
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tac cag tct att atg tac ata gtt gtc gtt gta ggg tat agg att tat	672
Tyr Gln Ser Ile Met Tyr Ile Val Val Val Val Gly Tyr Arg Ile Tyr	
210 215 220	
gat gtg gtt ctg agt ccg tct cat gga att gaa cta tct gtt gga gaa	720
Asp Val Val Leu Ser Pro Ser His Gly Ile Glu Leu Ser Val Gly Glu	
225 230 235 240	



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gta aac cga gac cta aaa acc cag tct ggg agt gag atg aag aaa ttt Val Asn Arg Asp Leu Lys Thr Gln Ser Gly Ser Glu Met Lys Lys Phe 275 280 285	864
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tac acc tgt gca gca tcc agt ggg ctg atg acc aag aag aac agc aca Tyr Thr Cys Ala Ala Ser Ser Gly Leu Met Thr Lys Lys Asn Ser Thr 305 310 315 320	960
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gcc att cct ccc ccg cat cac atc cac tgg tat tgg cag ttg gag gaa Ala Ile Pro Pro Pro His His Ile His Trp Tyr Trp Gln Leu Glu Glu 450 455 460	1392
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Ile	Glu	Val	Asn	Lys	Asn	Gln	Phe	Ala	Leu	Ile	Glu	Gly	Lys	Asn	Lys		
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Thr	Val	Ser	Thr	Leu	Val	Ile	Gln	Ala	Ala	Asn	Val	Ser	Ala	Leu	Tyr		
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aaa	tgt	gaa	gcg	gtc	aac	aaa	gtc	ggg	aga	gga	gag	agg	gtg	atc	tcc	1632	
Lys	Cys	Glu	Ala	Val	Asn	Lys	Val	Gly	Arg	Gly	Glu	Arg	Val	Ile	Ser		
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Phe	His	Val	Thr	Arg	Gly	Pro	Glu	Ile	Thr	Leu	Gln	Pro	Asp	Met	Gln		
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Pro	Thr	Glu	Gln	Glu	Ser	Val	Ser	Leu	Trp	Cys	Thr	Ala	Asp	Arg	Ser		
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Thr	Phe	Glu	Asn	Leu	Thr	Trp	Tyr	Lys	Leu	Gly	Pro	Gln	Pro	Leu	Pro		
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Ile	His	Val	Gly	Glu	Leu	Pro	Thr	Pro	Val	Cys	Lys	Asn	Leu	Asp	Thr		
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ctt	tgg	aaa	ttg	aat	gcc	acc	atg	ttc	tct	aat	agc	aca	aat	gac	att	1872	
Leu	Trp	Lys	Leu	Asn	Ala	Thr	Met	Phe	Ser	Asn	Ser	Thr	Asn	Asp	Ile		
	610					615					620						
ttg	atc	atg	gag	ctt	aag	aat	gca	tcc	ttg	cag	gac	caa	gga	gac	tat	1920	
Leu	Ile	Met	Glu	Leu	Lys	Asn	Ala	Ser	Leu	Gln	Asp	Gln	Gly	Asp	Tyr		
	625				630					635					640		
gtc	tgc	ctt	gct	caa	gac	agg	aag	acc	aag	aaa	aga	cat	tgc	gtg	gtc	1968	
Val	Cys	Leu	Ala	Gln	Asp	Arg	Lys	Thr	Lys	Lys	Arg	His	Cys	Val	Val		
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agg	cag	ctc	aca	gtc	cta	gag	cgt	gtg	gca	ccc	acg	atc	aca	gga	aac	2016	
Arg	Gln	Leu	Thr	Val	Leu	Glu	Arg	Val	Ala	Pro	Thr	Ile	Thr	Gly	Asn		
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Leu	Glu	Asn	Gln	Thr	Thr	Ser	Ile	Gly	Glu	Ser	Ile	Glu	Val	Ser	Cys		
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Thr	Ala	Ser	Gly	Asn	Pro	Pro	Pro	Gln	Ile	Met	Trp	Phe	Lys	Asp	Asn		
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Glu	Thr	Leu	Val	Glu	Asp	Ser	Gly	Ile	Val	Leu	Lys	Asp	Gly	Asn	Arg		
	705				710					715					720		
aac	ctc	act	atc	cgc	aga	gtg	agg	aag	gag	gac	gaa	ggc	ctc	tac	acc	2208	
Asn	Leu	Thr	Ile	Arg	Arg	Val	Arg	Lys	Glu	Asp	Glu	Gly	Leu	Tyr	Thr		

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Cys	Gln	Ala	Cys	Ser	Val	Leu	Gly	Cys	Ala	Lys	Val	Glu	Ala	Phe	Phe					
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Ile	Ile	Glu	Gly	Ala	Gln	Glu	Lys	Thr	Asn	Leu	Glu	Ile	Ile	Ile	Leu					
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gta	ggc	acg	gcg	gtg	att	gcc	atg	ttc	ttc	tgg	cta	ctt	ctt	gtc	atc	2352				
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Tyr	Leu	Ser	Ile	Val	Met	Asp	Pro	Asp	Glu	Leu	Pro	Leu	Asp	Glu	His					
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Cys	Glu	Arg	Leu	Pro	Tyr	Asp	Ala	Ser	Lys	Trp	Glu	Phe	Pro	Arg	Asp					
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	850					855					860									
gta	gca	gtc	aaa	atg	ttg	aaa	gaa	gga	gca	aca	cac	agt	gag	cat	cga	2640				
Val	Ala	Val	Lys	Met	Leu	Lys	Glu	Gly	Ala	Thr	His	Ser	Glu	His	Arg					
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gct	ctc	atg	tct	gaa	ctc	aag	atc	ctc	att	cat	att	ggc	cac	cat	ctc	2688				
Ala	Leu	Met	Ser	Glu	Leu	Lys	Ile	Leu	Ile	His	Ile	Gly	His	His	Leu					
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Glu Asp Leu Tyr Lys Asp Phe Leu Thr Leu Glu His Leu Ile Cys Tyr	
995 1000 1005	
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Cys Ile His Arg Asp Leu Ala Arg Asn Ile Leu Leu Ser Glu	
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Lys Asn Val Val Lys Ile Cys Asp Phe Gly Leu Ala Arg Asp Ile	
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Glu Glu Glu Val Cys Asp Pro Lys Phe His Tyr Asp Asn Thr Ala	
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Tyr His Ser Asp Asp Thr Asp Thr Thr Val Tyr Ser Ser Glu Glu	
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Pro Pro Val	
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Arg Leu Ser Ile Gln Lys Asp Ile Leu Thr Ile Lys Ala Asn Thr Thr

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Asn Asn Gln Ser Gly Ser Glu Gln Arg Val Glu Val Thr Glu Cys Ser 65 70 75 80		
Asp Gly Leu Phe Cys Lys Thr Leu Thr Ile Pro Lys Val Ile Gly Asn 85 90 95		
Asp Thr Gly Ala Tyr Lys Cys Phe Tyr Arg Glu Thr Asp Leu Ala Ser 100 105 110		
Val Ile Tyr Val Tyr Val Gln Asp Tyr Arg Ser Pro Phe Ile Ala Ser 115 120 125		
Val Ser Asp Gln His Gly Val Val Tyr Ile Thr Glu Asn Lys Asn Lys 130 135 140		
Thr Val Val Ile Pro Cys Leu Gly Ser Ile Ser Asn Leu Asn Val Ser 145 150 155 160		
Leu Cys Ala Arg Tyr Pro Glu Lys Arg Phe Val Pro Asp Gly Asn Arg 165 170 175		
Ile Ser Trp Asp Ser Lys Lys Gly Phe Thr Ile Pro Ser Tyr Met Ile 180 185 190		
Ser Tyr Ala Gly Met Val Phe Cys Glu Ala Lys Ile Asn Asp Glu Ser 195 200 205		
Tyr Gln Ser Ile Met Tyr Ile Val Val Val Val Gly Tyr Arg Ile Tyr 210 215 220		
Asp Val Val Leu Ser Pro Ser His Gly Ile Glu Leu Ser Val Gly Glu 225 230 235 240		
Lys Leu Val Leu Asn Cys Thr Ala Arg Thr Glu Leu Asn Val Gly Ile 245 250 255		
Asp Phe Asn Trp Glu Tyr Pro Ser Ser Lys His Gln His Lys Lys Leu 260 265 270		
Val Asn Arg Asp Leu Lys Thr Gln Ser Gly Ser Glu Met Lys Lys Phe 275 280 285		

Leu Ser Thr Leu Thr Ile Asp Gly Val Thr Arg Ser Asp Gln Gly Leu  
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Tyr Thr Cys Ala Ala Ser Ser Gly Leu Met Thr Lys Lys Asn Ser Thr  
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Phe Val Arg Val His Glu Lys Pro Phe Val Ala Phe Gly Ser Gly Met  
 325 330 335

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Asp Ser Tyr Gln Tyr Gly Thr Thr Gln Thr Leu Thr Cys Thr Val Tyr  
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Glu Cys Ala Asn Glu Pro Ser Gln Ala Val Ser Val Thr Asn Pro Tyr  
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Lys Cys Glu Ala Val Asn Lys Val Gly Arg Gly Glu Arg Val Ile Ser  
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Pro Thr Glu Gln Glu Ser Val Ser Leu Trp Cys Thr Ala Asp Arg Ser  
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Ile His Val Gly Glu Leu Pro Thr Pro Val Cys Lys Asn Leu Asp Thr  
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Leu Ile Met Glu Leu Lys Asn Ala Ser Leu Gln Asp Gln Gly Asp Tyr  
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Pro Leu Val Ser Asp Ala Glu Thr Ser Leu Thr Cys Ile Ala Ser Gly	35	40	45
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Met Asn Gln His Gln Asp Pro Leu Glu Val Thr Gln Asp Val Thr Arg	65	70	75
Glu Trp Ala Lys Lys Val Val Trp Lys Arg Glu Lys Ala Ser Lys Ile	85	90	95
Asn Gly Ala Tyr Phe Cys Glu Gly Arg Val Arg Gly Glu Ala Ile Arg	100	105	110
Ile Arg Thr Met Lys Met Arg Gln Gln Ala Ser Phe Leu Pro Ala Thr	115	120	125
Leu Thr Met Thr Val Asp Lys Gly Asp Asn Val Asn Ile Ser Phe Lys	130	135	140
Lys Val Leu Ile Lys Glu Glu Asp Ala Val Ile Tyr Lys Asn Gly Ser	145	150	155
Phe Ile His Ser Val Pro Arg His Glu Val Pro Asp Ile Leu Glu Val	165	170	175
His Leu Pro His Ala Gln Pro Gln Asp Ala Gly Val Tyr Ser Ala Arg	180	185	190
Tyr Ile Gly Gly Asn Leu Phe Thr Ser Ala Phe Thr Arg Leu Ile Val	195	200	205
Arg Arg Cys Glu Ala Gln Lys Trp Gly Pro Glu Cys Asn His Leu Cys	210	215	220
Thr Ala Cys Met Asn Asn Gly Val Cys His Glu Asp Thr Gly Glu Cys	225	230	235
Ile Cys Pro Pro Gly Phe Met Gly Arg Thr Cys Glu Lys Ala Cys Glu	245	250	255

Leu His Thr Phe Gly Arg Thr Cys Lys Glu Arg Cys Ser Gly Gln Glu  
 260 265 270

Gly Cys Lys Ser Tyr Val Phe Cys Leu Pro Asp Pro Tyr Gly Cys Ser  
 275 280 285

Cys Ala Thr Gly Trp Lys Gly Leu Gln Cys Asn Glu Ala Cys His Pro  
 290 295 300

Gly Phe Tyr Gly Pro Asp Cys Lys Leu Arg Cys Ser Cys Asn Asn Gly  
 305 310 315 320

Glu Met Cys Asp Arg Phe Gln Gly Cys Leu Cys Ser Pro Gly Trp Gln  
 325 330 335

Gly Leu Gln Cys Glu Arg Glu Gly Ile Pro Arg Met Thr Pro Lys Ile  
 340 345 350

Val Asp Leu Pro Asp His Ile Glu Val Asn Ser Gly Lys Phe Asn Pro  
 355 360 365

Ile Cys Lys Ala Ser Gly Trp Pro Leu Pro Thr Asn Glu Glu Met Thr  
 370 375 380

Leu Val Lys Pro Asp Gly Thr Val Leu His Pro Lys Asp Phe Asn His  
 385 390 395 400

Thr Asp His Phe Ser Val Ala Ile Phe Thr Ile His Arg Ile Leu Pro  
 405 410 415

Pro Asp Ser Gly Val Trp Val Cys Ser Val Asn Thr Val Ala Gly Met  
 420 425 430

Val Glu Lys Pro Phe Asn Ile Ser Val Lys Val Leu Pro Lys Pro Leu  
 435 440 445

Asn Ala Pro Asn Val Ile Asp Thr Gly His Asn Phe Ala Val Ile Asn  
 450 455 460

Ile Ser Ser Glu Pro Tyr Phe Gly Asp Gly Pro Ile Lys Ser Lys Lys  
 465 470 475 480

Leu Leu Tyr Lys Pro Val Asn His Tyr Glu Ala Trp Gln His Ile Gln  
 485 490 495

Val Thr Asn Glu Ile Val Thr Leu Asn Tyr Leu Glu Pro Arg Thr Glu  
500 505 510

Tyr Glu Leu Cys Val Gln Leu Val Arg Arg Gly Glu Gly Gly Glu Gly  
515 520 525

His Pro Gly Pro Val Arg Arg Phe Thr Thr Ala Ser Ile Gly Leu Pro  
530 535 540

Pro Pro Arg Gly Leu Asn Leu Leu Pro Lys Ser Gln Thr Thr Leu Asn  
545 550 555 560

Leu Thr Trp Gln Pro Ile Phe Pro Ser Ser Glu Asp Asp Phe Tyr Val  
565 570 575

Glu Val Glu Arg Arg Ser Val Gln Lys Ser Asp Gln Gln Asn Ile Lys  
580 585 590

Val Pro Gly Asn Leu Thr Ser Val Leu Leu Asn Asn Leu His Pro Arg  
595 600 605

Glu Gln Tyr Val Val Arg Ala Arg Val Asn Thr Lys Ala Gln Gly Glu  
610 615 620

Trp Ser Glu Asp Leu Thr Ala Trp Thr Leu Ser Asp Ile Leu Pro Pro  
625 630 635 640

Gln Pro Glu Asn Ile Lys Ile Ser Asn Ile Thr His Ser Ser Ala Val  
645 650 655

Ile Ser Trp Thr Ile Leu Asp Gly Tyr Ser Ile Ser Ser Ile Thr Ile  
660 665 670

Arg Tyr Lys Val Gln Gly Lys Asn Glu Asp Gln His Val Asp Val Lys  
675 680 685

Ile Lys Asn Ala Thr Ile Ile Gln Tyr Gln Leu Lys Gly Leu Glu Pro  
690 695 700

Glu Thr Ala Tyr Gln Val Asp Ile Phe Ala Glu Asn Asn Ile Gly Ser  
705 710 715 720

Ser Asn Pro Ala Phe Ser His Glu Leu Val Thr Leu Pro Glu Ser Gln  
725 730 735

Ala Pro Ala Asp Leu Gly Gly Gly Lys Met Leu Leu Ile Ala Ile Leu  
740 745 750

Gly Ser Ala Gly Met Thr Cys Leu Thr Val Leu Leu Ala Phe Leu Ile  
755 760 765

Ile Leu Gln Leu Lys Arg Ala Asn Val Gln Arg Arg Met Ala Gln Ala  
770 775 780

Phe Gln Asn Val Arg Glu Glu Pro Ala Val Gln Phe Asn Ser Gly Thr  
785 790 795 800

Leu Ala Leu Asn Arg Lys Val Lys Asn Asn Pro Asp Pro Thr Ile Tyr  
805 810 815

Pro Val Leu Asp Trp Asn Asp Ile Lys Phe Gln Asp Val Ile Gly Glu  
820 825 830

Gly Asn Phe Gly Gln Val Leu Lys Ala Arg Ile Lys Lys Asp Gly Leu  
835 840 845

Arg Met Asp Ala Ala Ile Lys Arg Met Lys Glu Tyr Ala Ser Lys Asp  
850 855 860

Asp His Arg Asp Phe Ala Gly Glu Leu Glu Val Leu Cys Lys Leu Gly  
865 870 875 880

His His Pro Asn Ile Ile Asn Leu Leu Gly Ala Cys Glu His Arg Gly  
885 890 895

Tyr Leu Tyr Leu Ala Ile Glu Tyr Ala Pro His Gly Asn Leu Leu Asp  
900 905 910

Phe Leu Arg Lys Ser Arg Val Leu Glu Thr Asp Pro Ala Phe Ala Ile  
915 920 925

Ala Asn Ser Thr Ala Ser Thr Leu Ser Ser Gln Gln Leu Leu His Phe  
930 935 940

Ala Ala Asp Val Ala Arg Gly Met Asp Tyr Leu Ser Gln Lys Gln Phe  
945 950 955 960

Ile His Arg Asp Leu Ala Ala Arg Asn Ile Leu Val Gly Glu Asn Tyr  
965 970 975

Val Ala Lys Ile Ala Asp Phe Gly Leu Ser Arg Gly Gln Glu Val Tyr

980

985

990

Val Lys Lys Thr Met Gly Arg Leu Pro Val Arg Trp Met Ala Ile Glu  
 995 1000 1005

Ser Leu Asn Tyr Ser Val Tyr Thr Thr Asn Ser Asp Val Trp Ser  
 1010 1015 1020

Tyr Gly Val Leu Leu Trp Glu Ile Val Ser Leu Gly Gly Thr Pro  
 1025 1030 1035

Tyr Cys Gly Met Thr Cys Ala Glu Leu Tyr Glu Lys Leu Pro Gln  
 1040 1045 1050

Gly Tyr Arg Leu Glu Lys Pro Leu Asn Cys Asp Asp Glu Val Tyr  
 1055 1060 1065

Asp Leu Met Arg Gln Cys Trp Arg Glu Lys Pro Tyr Glu Arg Pro  
 1070 1075 1080

Ser Phe Ala Gln Ile Leu Val Ser Leu Asn Arg Met Leu Glu Glu  
 1085 1090 1095

Arg Lys Thr Tyr Val Asn Thr Thr Leu Tyr Glu Lys Phe Thr Tyr  
 1100 1105 1110

Ala Gly Ile Asp Cys Ser Ala Glu Glu Ala Ala  
 1115 1120

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 <211> 355  
 <212> PRT  
 <213> Homo sapiens

<400> 9

Arg Gln Lys Val Ser His Gly Arg Glu Arg Pro Ser Ala Arg Leu Ser  
 1 5 10 15

Ile Arg Arg Asp Arg Pro Leu Ser Val His Leu Asn Leu Gly Gln Lys  
 20 25 30

Gly Asn Arg Lys Thr Ser Cys Pro Ile Lys Ile Asn Gln Phe Glu Gly  
 35 40 45

His Phe Met Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser Lys Glu  
 50 55 60

Tyr Glu Glu Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp Ile Ala  
 65 70 75 80

Leu Leu Pro Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile Leu Pro  
 85 90 95

Tyr Asp Ala Thr Arg Val Lys Leu Ser Asn Val Asp Asp Asp Pro Cys  
 100 105 110

Ser Asp Tyr Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn Phe Arg Arg  
 115 120 125

Glu Tyr Ile Val Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp Asp Phe  
 130 135 140

Trp Lys Met Val Trp Glu Gln Asn Val His Asn Ile Val Met Val Thr  
 145 150 155 160

Gln Cys Val Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp Pro Ala  
 165 170 175

Asp Gln Asp Ser Leu Tyr Tyr Gly Asp Leu Ile Leu Gln Met Leu Ser  
 180 185 190

Glu Ser Val Leu Pro Glu Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly  
 195 200 205

Glu Glu Gln Leu Asp Ala His Arg Leu Ile Arg His Phe His Tyr Thr  
 210 215 220

Val Trp Pro Asp His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln  
 225 230 235 240

Phe Val Arg Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly  
 245 250 255

Pro Thr Val Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe  
 260 265 270

Ile Ala Leu Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val  
 275 280 285

Asp Ile Tyr Gly Ala Val His Asp Leu Arg Leu His Arg Val His Met  
 290 295 300

Val Gln Thr Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val Arg Asp  
 305 310 315 320

Val Leu Arg Ala Arg Lys Leu Arg Ser Glu Gln Glu Asn Pro Leu Phe  
 325 330 335

Pro Ile Tyr Glu Asn Val Asn Pro Glu Tyr His Arg Asp Pro Val Tyr  
 340 345 350

Ser Arg His  
 355

<210> 10  
 <211> 1704  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)..(1704)

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 Lys Arg Ala Asn Gly Gly Glu Leu Lys Thr Gly Tyr Leu Ser Ile Val  
 1 5 10 15  
 atg gat cca gat gaa ctc cca ttg gat gaa cat tgt gaa cga ctg cct 96  
 Met Asp Pro Asp Glu Leu Pro Leu Asp Glu His Cys Glu Arg Leu Pro  
 20 25 30  
 tat gat gcc agc aaa tgg gaa ttc ccc aga gac cgg ctg aag cta ggt 144  
 Tyr Asp Ala Ser Lys Trp Glu Phe Pro Arg Asp Arg Leu Lys Leu Gly  
 35 40 45  
 aag cct ctt ggc cgt ggt gcc ttt ggc caa gtg att gaa gca gat gcc 192  
 Lys Pro Leu Gly Arg Gly Ala Phe Gly Gln Val Ile Glu Ala Asp Ala  
 50 55 60  
 ttt gga att gac aag aca gca act tgc agg aca gta gca gtc aaa atg 240  
 Phe Gly Ile Asp Lys Thr Ala Thr Cys Arg Thr Val Ala Val Lys Met  
 65 70 75 80  
 ttg aaa gaa gga gca aca cac agt gag cat cga gct ctc atg tct gaa 288  
 Leu Lys Glu Gly Ala Thr His Ser Glu His Arg Ala Leu Met Ser Glu  
 85 90 95  
 ctc aag atc ctc att cat att ggt cac cat ctc aat gtg gtc aac ctt 336  
 Leu Lys Ile Leu Ile His Ile Gly His His Leu Asn Val Val Asn Leu  
 100 105 110  
 cta ggt gcc tgt acc aag cca gga ggg cca ctc atg gtg att gtg gaa 384  
 Leu Gly Ala Cys Thr Lys Pro Gly Gly Pro Leu Met Val Ile Val Glu  
 115 120 125  
 ttc tgc aaa ttt gga aac ctg tcc act tac ctg agg agc aag aga aat 432  
 Phe Cys Lys Phe Gly Asn Leu Ser Thr Tyr Leu Arg Ser Lys Arg Asn

130	135	140	
gaa ttt gtc ccc tac aag acc aaa ggg gca cga ttc cgt caa ggg aaa Glu Phe Val Pro Tyr Lys Thr Lys Gly Ala Arg Phe Arg Gln Gly Lys 145 150 155 160			480
gac tac gtt gga gca atc cct gtg gat ctg aaa cgg cgc ttg gac agc Asp Tyr Val Gly Ala Ile Pro Val Asp Leu Lys Arg Arg Leu Asp Ser 165 170 175			528
atc acc agt agc cag agc tca gcc agc tct gga ttt gtg gag gag aag Ile Thr Ser Ser Gln Ser Ser Ala Ser Ser Gly Phe Val Glu Glu Lys 180 185 190			576
tcc ctc agt gat gta gaa gaa gag gaa gct cct gaa gat ctg tat aag Ser Leu Ser Asp Val Glu Glu Glu Ala Pro Glu Asp Leu Tyr Lys 195 200 205			624
gac ttc ctg acc ttg gag cat ctc atc tgt tac agc ttc caa gtg gct Asp Phe Leu Thr Leu Glu His Leu Ile Cys Tyr Ser Phe Gln Val Ala 210 215 220			672
aag ggc atg gag ttc ttg gca tcg cga aag tgt atc cac agg gac ctg Lys Gly Met Glu Phe Leu Ala Ser Arg Lys Cys Ile His Arg Asp Leu 225 230 235 240			720
gcg gca cga aat atc ctc tta tcg gag aag aac gtg gtt aaa atc tgt Ala Ala Arg Asn Ile Leu Leu Ser Glu Lys Asn Val Val Lys Ile Cys 245 250 255			768
gac ttt ggc ttg gcc cgg gat att tat aaa gat cca gat tat gtc aga Asp Phe Gly Leu Ala Arg Asp Ile Tyr Lys Asp Pro Asp Tyr Val Arg 260 265 270			816
aaa gga gat gct cgc ctc cct ttg aaa tgg atg gcc cca gaa aca att Lys Gly Asp Ala Arg Leu Pro Leu Lys Trp Met Ala Pro Glu Thr Ile 275 280 285			864
ttt gac aga gtg tac aca atc cag agt gac gtc tgg tct ttt ggt gtt Phe Asp Arg Val Tyr Thr Ile Gln Ser Asp Val Trp Ser Phe Gly Val 290 295 300			912
ttg ctg tgg gaa ata ttt tcc tta ggt gct tct cca tat cct ggg gta Leu Leu Trp Glu Ile Phe Ser Leu Gly Ala Ser Pro Tyr Pro Gly Val 305 310 315 320			960
aag att gat gaa gaa ttt tgt agg cga ttg aaa gaa gga act aga atg Lys Ile Asp Glu Glu Phe Cys Arg Arg Leu Lys Glu Gly Thr Arg Met 325 330 335			1008
agg gcc cct gat tat act aca cca gaa atg tac cag acc atg ctg gac Arg Ala Pro Asp Tyr Thr Thr Pro Glu Met Tyr Gln Thr Met Leu Asp 340 345 350			1056
tgc tgg cac ggg gag ccc agt cag aga ccc acg ttt tca gag ttg gtg Cys Trp His Gly Glu Pro Ser Gln Arg Pro Thr Phe Ser Glu Leu Val 355 360 365			1104
gaa cat ttg gga aat ctc ttg caa gct aat gct cag cag gat ggc aaa Glu His Leu Gly Asn Leu Leu Gln Ala Asn Ala Gln Gln Asp Gly Lys 370 375 380			1152



gac tac att gtt ctt ccg ata tca gag act ttg agc atg gaa gag gat	1200
Asp Tyr Ile Val Leu Pro Ile Ser Glu Thr Leu Ser Met Glu Glu Asp	
385 390 395 400	
tct gga ctc tct ctg cct acc tca cct gtt tcc tgt atg gag gag gag	1248
Ser Gly Leu Ser Leu Pro Thr Ser Pro Val Ser Cys Met Glu Glu Glu	
405 410 415	
gaa gta tgt gac ccc aaa ttc cat tat gac aac aca gca gga atc agt	1296
Glu Val Cys Asp Pro Lys Phe His Tyr Asp Asn Thr Ala Gly Ile Ser	
420 425 430	
cag tat ctg cag aac agt aag cga aag agc cgg cct gtg agt gta aaa	1344
Gln Tyr Leu Gln Asn Ser Lys Arg Lys Ser Arg Pro Val Ser Val Lys	
435 440 445	
aca ttt gaa gat atc ccg tta gaa gaa cca gaa gta aaa gta atc cca	1392
Thr Phe Glu Asp Ile Pro Leu Glu Glu Pro Glu Val Lys Val Ile Pro	
450 455 460	
gat gac aac cag acg gac agt ggt atg gtt ctt gcc tca gaa gag ctg	1440
Asp Asp Asn Gln Thr Asp Ser Gly Met Val Leu Ala Ser Glu Glu Leu	
465 470 475 480	
aaa act ttg gaa gac aga acc aaa tta tct cca tct ttt ggt gga atg	1488
Lys Thr Leu Glu Asp Arg Thr Lys Leu Ser Pro Ser Phe Gly Gly Met	
485 490 495	
gtg ccc agc aaa agc agg gag tct gtg gca tct gaa ggc tca aac cag	1536
Val Pro Ser Lys Ser Arg Glu Ser Val Ala Ser Glu Gly Ser Asn Gln	
500 505 510	
aca agc ggc tac cag tcc gga tat cac tcc gat gac aca gac acc acc	1584
Thr Ser Gly Tyr Gln Ser Gly Tyr His Ser Asp Asp Thr Asp Thr Thr	
515 520 525	
gtg tac tcc agt gag gaa gca gaa ctt tta aag ctg ata gag att gga	1632
Val Tyr Ser Ser Glu Glu Ala Glu Leu Leu Lys Leu Ile Glu Ile Gly	
530 535 540	
gtg caa acc ggt agc aca gcc cag att ctc cag cct gac tcg ggg acc	1680
Val Gln Thr Gly Ser Thr Ala Gln Ile Leu Gln Pro Asp Ser Gly Thr	
545 550 555 560	
aca ctg agc tct cct cct gtt taa	1704
Thr Leu Ser Ser Pro Pro Val	
565	
<p>&lt;210&gt; 11</p> <p>&lt;211&gt; 567</p> <p>&lt;212&gt; PRT</p> <p>&lt;213&gt; Homo sapiens</p> <p>&lt;400&gt; 11</p>	
Lys Arg Ala Asn Gly Gly Glu Leu Lys Thr Gly Tyr Leu Ser Ile Val	
1 5 10 15	

Met Asp Pro Asp Glu Leu Pro Leu Asp Glu His Cys Glu Arg Leu Pro  
 20 25 30

Tyr Asp Ala Ser Lys Trp Glu Phe Pro Arg Asp Arg Leu Lys Leu Gly  
 35 40 45

Lys Pro Leu Gly Arg Gly Ala Phe Gly Gln Val Ile Glu Ala Asp Ala  
 50 55 60

Phe Gly Ile Asp Lys Thr Ala Thr Cys Arg Thr Val Ala Val Lys Met  
 65 70 75 80

Leu Lys Glu Gly Ala Thr His Ser Glu His Arg Ala Leu Met Ser Glu  
 85 90 95

Leu Lys Ile Leu Ile His Ile Gly His His Leu Asn Val Val Asn Leu  
 100 105 110

Leu Gly Ala Cys Thr Lys Pro Gly Gly Pro Leu Met Val Ile Val Glu  
 115 120 125

Phe Cys Lys Phe Gly Asn Leu Ser Thr Tyr Leu Arg Ser Lys Arg Asn  
 130 135 140

Glu Phe Val Pro Tyr Lys Thr Lys Gly Ala Arg Phe Arg Gln Gly Lys  
 145 150 155 160

Asp Tyr Val Gly Ala Ile Pro Val Asp Leu Lys Arg Arg Leu Asp Ser  
 165 170 175

Ile Thr Ser Ser Gln Ser Ser Ala Ser Ser Gly Phe Val Glu Glu Lys  
 180 185 190

Ser Leu Ser Asp Val Glu Glu Glu Glu Ala Pro Glu Asp Leu Tyr Lys  
 195 200 205

Asp Phe Leu Thr Leu Glu His Leu Ile Cys Tyr Ser Phe Gln Val Ala  
 210 215 220

Lys Gly Met Glu Phe Leu Ala Ser Arg Lys Cys Ile His Arg Asp Leu  
 225 230 235 240

Ala Ala Arg Asn Ile Leu Leu Ser Glu Lys Asn Val Val Lys Ile Cys  
 245 250 255

Asp Phe Gly Leu Ala Arg Asp Ile Tyr Lys Asp Pro Asp Tyr Val Arg

260							265							270						
Lys	Gly	Asp	Ala	Arg	Leu	Pro	Leu	Lys	Trp	Met	Ala	Pro	Glu	Thr	Ile					
		275					280					285								
Phe	Asp	Arg	Val	Tyr	Thr	Ile	Gln	Ser	Asp	Val	Trp	Ser	Phe	Gly	Val					
	290					295					300									
Leu	Leu	Trp	Glu	Ile	Phe	Ser	Leu	Gly	Ala	Ser	Pro	Tyr	Pro	Gly	Val					
305					310					315					320					
Lys	Ile	Asp	Glu	Glu	Phe	Cys	Arg	Arg	Leu	Lys	Glu	Gly	Thr	Arg	Met					
				325					330					335						
Arg	Ala	Pro	Asp	Tyr	Thr	Thr	Pro	Glu	Met	Tyr	Gln	Thr	Met	Leu	Asp					
			340					345					350							
Cys	Trp	His	Gly	Glu	Pro	Ser	Gln	Arg	Pro	Thr	Phe	Ser	Glu	Leu	Val					
		355					360					365								
Glu	His	Leu	Gly	Asn	Leu	Leu	Gln	Ala	Asn	Ala	Gln	Gln	Asp	Gly	Lys					
	370					375					380									
Asp	Tyr	Ile	Val	Leu	Pro	Ile	Ser	Glu	Thr	Leu	Ser	Met	Glu	Glu	Asp					
385					390					395					400					
Ser	Gly	Leu	Ser	Leu	Pro	Thr	Ser	Pro	Val	Ser	Cys	Met	Glu	Glu	Glu					
				405					410					415						
Glu	Val	Cys	Asp	Pro	Lys	Phe	His	Tyr	Asp	Asn	Thr	Ala	Gly	Ile	Ser					
			420					425					430							
Gln	Tyr	Leu	Gln	Asn	Ser	Lys	Arg	Lys	Ser	Arg	Pro	Val	Ser	Val	Lys					
		435					440					445								
Thr	Phe	Glu	Asp	Ile	Pro	Leu	Glu	Glu	Pro	Glu	Val	Lys	Val	Ile	Pro					
	450					455					460									
Asp	Asp	Asn	Gln	Thr	Asp	Ser	Gly	Met	Val	Leu	Ala	Ser	Glu	Glu	Leu					
465					470					475					480					
Lys	Thr	Leu	Glu	Asp	Arg	Thr	Lys	Leu	Ser	Pro	Ser	Phe	Gly	Gly	Met					
				485					490					495						
Val	Pro	Ser	Lys	Ser	Arg	Glu	Ser	Val	Ala	Ser	Glu	Gly	Ser	Asn	Gln					
			500					505					510							

Thr Ser Gly Tyr Gln Ser Gly Tyr His Ser Asp Asp Thr Asp Thr Thr  
515 520 525

Val Tyr Ser Ser Glu Glu Ala Glu Leu Leu Lys Leu Ile Glu Ile Gly  
530 535 540

Val Gln Thr Gly Ser Thr Ala Gln Ile Leu Gln Pro Asp Ser Gly Thr  
545 550 555 560

Thr Leu Ser Ser Pro Pro Val  
565

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<211> 1067  
<212> DNA  
<213> Homo sapiens

<220>  
<221> CDS  
<222> (1)..(1059)

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Lys Arg Ala Asn Val Gln Arg Arg Met Ala Gln Ala Phe Gln Asn Val  
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agg gaa gaa cca gct gtg cag ttc aac tca ggg act ctg gcc cta aac 96  
Arg Glu Glu Pro Ala Val Gln Phe Asn Ser Gly Thr Leu Ala Leu Asn  
20 25 30  
agg aag gtc aaa aac aac cca gat cct aca att tat cca gtg ctt gac 144  
Arg Lys Val Lys Asn Asn Pro Asp Pro Thr Ile Tyr Pro Val Leu Asp  
35 40 45  
tgg aat gac atc aaa ttt caa gat gtg att ggg gag ggc aat ttt ggc 192  
Trp Asn Asp Ile Lys Phe Gln Asp Val Ile Gly Glu Gly Asn Phe Gly  
50 55 60  
caa gtt ctt aag gcg cgc atc aag aag gat ggg tta cgg atg gat gct 240  
Gln Val Leu Lys Ala Arg Ile Lys Lys Asp Gly Leu Arg Met Asp Ala  
65 70 75 80  
gcc atc aaa aga atg aaa gaa tat gcc tcc aaa gat gat cac agg gac 288  
Ala Ile Lys Arg Met Lys Glu Tyr Ala Ser Lys Asp Asp His Arg Asp  
85 90 95  
ttt gca gga gaa ctg gaa gtt ctt tgt aaa ctt gga cac cat cca aac 336  
Phe Ala Gly Glu Leu Glu Val Leu Cys Lys Leu Gly His His Pro Asn  
100 105 110  
atc atc aat ctc tta gga gca tgt gaa cat cga ggc tac ttg tac ctg 384  
Ile Ile Asn Leu Leu Gly Ala Cys Glu His Arg Gly Tyr Leu Tyr Leu  
115 120 125

gcc att gag tac gcg ccc cat gga aac ctt ctg gac ttc ctt cgc aag 432  
 Ala Ile Glu Tyr Ala Pro His Gly Asn Leu Leu Asp Phe Leu Arg Lys  
 130 135 140

agc cgt gtg ctg gag acg gac cca gca ttt gcc att gcc aat agc acc 480  
 Ser Arg Val Leu Glu Thr Asp Pro Ala Phe Ala Ile Ala Asn Ser Thr  
 145 150 155 160

gcg tcc aca ctg tcc tcc cag cag ctc ctt cac ttc gct gcc gac gtg 528  
 Ala Ser Thr Leu Ser Ser Gln Gln Leu Leu His Phe Ala Ala Asp Val  
 165 170 175

gcc cgg ggc atg gac tac ttg agc caa aaa cag ttt atc cac agg gat 576  
 Ala Arg Gly Met Asp Tyr Leu Ser Gln Lys Gln Phe Ile His Arg Asp  
 180 185 190

ctg gct gcc aga aac att tta gtt ggt gaa aac tat gtg gca aaa ata 624  
 Leu Ala Ala Arg Asn Ile Leu Val Gly Glu Asn Tyr Val Ala Lys Ile  
 195 200 205

gca gat ttt gga ttg tcc cga ggt caa gag gtg tac gtg aaa aag aca 672  
 Ala Asp Phe Gly Leu Ser Arg Gly Gln Glu Val Tyr Val Lys Lys Thr  
 210 215 220

atg gga agg ctc cca gtg cgc tgg atg gcc atc gag tca ctg aat tac 720  
 Met Gly Arg Leu Pro Val Arg Trp Met Ala Ile Glu Ser Leu Asn Tyr  
 225 230 235 240

agt gtg tac aca acc aac agt gat gta tgg tcc tat ggt gtg tta cta 768  
 Ser Val Tyr Thr Thr Asn Ser Asp Val Trp Ser Tyr Gly Val Leu Leu  
 245 250 255

tgg gag att gtt agc tta gga ggc aca ccc tac tgc ggg atg act tgt 816  
 Trp Glu Ile Val Ser Leu Gly Gly Thr Pro Tyr Cys Gly Met Thr Cys  
 260 265 270

gca gaa ctc tac gag aag ctg ccc cag ggc tac aga ctg gag aag ccc 864  
 Ala Glu Leu Tyr Glu Lys Leu Pro Gln Gly Tyr Arg Leu Glu Lys Pro  
 275 280 285

ctg aac tgt gat gat gag gtg tat gat cta atg aga caa tgc tgg cgg 912  
 Leu Asn Cys Asp Asp Glu Val Tyr Asp Leu Met Arg Gln Cys Trp Arg  
 290 295 300

gag aag cct tat gag agg cca tca ttt gcc cag ata ttg gtg tcc tta 960  
 Glu Lys Pro Tyr Glu Arg Pro Ser Phe Ala Gln Ile Leu Val Ser Leu  
 305 310 315 320

aac aga atg tta gag gag cga aag acc tac gtg aat acc acg ctt tat 1008  
 Asn Arg Met Leu Glu Glu Arg Lys Thr Tyr Val Asn Thr Thr Leu Tyr  
 325 330 335

gag aag ttt act tat gca gga att gac tgt tct gct gaa gaa gcg gcc 1056  
 Glu Lys Phe Thr Tyr Ala Gly Ile Asp Cys Ser Ala Glu Glu Ala Ala  
 340 345 350

tag gacagaac 1067

<210> 13  
 <211> 352

<212> PRT  
<213> Homo sapiens

<400> 13

Lys Arg Ala Asn Val Gln Arg Arg Met Ala Gln Ala Phe Gln Asn Val  
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Arg Glu Glu Pro Ala Val Gln Phe Asn Ser Gly Thr Leu Ala Leu Asn  
20 25 30

Arg Lys Val Lys Asn Asn Pro Asp Pro Thr Ile Tyr Pro Val Leu Asp  
35 40 45

Trp Asn Asp Ile Lys Phe Gln Asp Val Ile Gly Glu Gly Asn Phe Gly  
50 55 60

Gln Val Leu Lys Ala Arg Ile Lys Lys Asp Gly Leu Arg Met Asp Ala  
65 70 75 80

Ala Ile Lys Arg Met Lys Glu Tyr Ala Ser Lys Asp Asp His Arg Asp  
85 90 95

Phe Ala Gly Glu Leu Glu Val Leu Cys Lys Leu Gly His His Pro Asn  
100 105 110

Ile Ile Asn Leu Leu Gly Ala Cys Glu His Arg Gly Tyr Leu Tyr Leu  
115 120 125

Ala Ile Glu Tyr Ala Pro His Gly Asn Leu Leu Asp Phe Leu Arg Lys  
130 135 140

Ser Arg Val Leu Glu Thr Asp Pro Ala Phe Ala Ile Ala Asn Ser Thr  
145 150 155 160

Ala Ser Thr Leu Ser Ser Gln Gln Leu Leu His Phe Ala Ala Asp Val  
165 170 175

Ala Arg Gly Met Asp Tyr Leu Ser Gln Lys Gln Phe Ile His Arg Asp  
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Leu Ala Ala Arg Asn Ile Leu Val Gly Glu Asn Tyr Val Ala Lys Ile  
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Ala Asp Phe Gly Leu Ser Arg Gly Gln Glu Val Tyr Val Lys Lys Thr  
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Met Gly Arg Leu Pro Val Arg Trp Met Ala Ile Glu Ser Leu Asn Tyr  
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Ser Val Tyr Thr Thr Asn Ser Asp Val Trp Ser Tyr Gly Val Leu Leu  
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Trp Glu Ile Val Ser Leu Gly Gly Thr Pro Tyr Cys Gly Met Thr Cys  
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Ala Glu Leu Tyr Glu Lys Leu Pro Gln Gly Tyr Arg Leu Glu Lys Pro  
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Leu Asn Cys Asp Asp Glu Val Tyr Asp Leu Met Arg Gln Cys Trp Arg  
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Glu Lys Pro Tyr Glu Arg Pro Ser Phe Ala Gln Ile Leu Val Ser Leu  
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 Ala Leu Trp Ile Thr Leu Ser Leu Leu Gln Thr Gly Leu Ala Glu Pro  
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gag aga tgt aac ttc acc ctg gcg gag tcc aag gcc tcc agc cat tct 150  
 Glu Arg Cys Asn Phe Thr Leu Ala Glu Ser Lys Ala Ser Ser His Ser  
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atc tat agc agt gac acc ctg ggg gcc gcg ttg tgc cct acc ttt cgg Ile Tyr Ser Ser Asp Thr Leu Gly Ala Ala Leu Cys Pro Thr Phe Arg 60 65 70	246
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acc atc tat aac ttc aag att att tct ctg gat gaa gag aga act gtg Thr Ile Tyr Asn Phe Lys Ile Ile Ser Leu Asp Glu Glu Arg Thr Val 90 95 100	342
gtc ttg caa aca gat cct tta cct cct gct agg ttt gga gtc agt aaa Val Leu Gln Thr Asp Pro Leu Pro Pro Ala Arg Phe Gly Val Ser Lys 105 110 115 120	390
gag aag acg act tca acc ggc ttg cat gtt tgg tgg act cct tct tcc Glu Lys Thr Thr Ser Thr Gly Leu His Val Trp Trp Thr Pro Ser Ser 125 130 135	438
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aag ata cag ggg gtt caa att caa gaa agt act tca tgg aat gaa tac Lys Ile Gln Gly Val Gln Ile Gln Glu Ser Thr Ser Trp Asn Glu Tyr 155 160 165	534
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cgg ctg atg cta atg gat aaa ggg atc cta gtt cat ggc ggt gtt gtg Arg Leu Met Leu Met Asp Lys Gly Ile Leu Val His Gly Gly Val Val 235 240 245	774
gac aaa cat gct act tcc tat gct ttt cac ggg ctg acc cct ggc tac Asp Lys His Ala Thr Ser Tyr Ala Phe His Gly Leu Thr Pro Gly Tyr 250 255 260	822
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Val Thr Asn Asp Gly Ser Leu Thr Ser Leu Lys Val Lys Trp Gln Arg	
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Pro Pro Gly Asn Val Asp Ser Tyr Asn Ile Thr Leu Ser His Lys Gly	
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Thr Ile Lys Glu Ser Arg Val Leu Ala Pro Trp Ile Thr Glu Thr His	
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Phe Lys Glu Leu Val Pro Gly Arg Leu Tyr Gln Val Thr Val Ser Cys	
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Val Ser Gly Glu Leu Ser Ala Gln Lys Met Ala Val Gly Arg Thr Phe	
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Pro Leu Ala Val Leu Gln Leu Arg Val Lys His Ala Asn Glu Thr Ser	
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ctg agt atc atg tgg cag acc cct gta gca gaa tgg gag aaa tac atc	1254
Leu Ser Ile Met Trp Gln Thr Pro Val Ala Glu Trp Glu Lys Tyr Ile	
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Ile Ser Leu Ala Asp Arg Asp Leu Leu Leu Ile His Lys Ser Leu Ser	
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Lys Asp Ala Lys Glu Phe Thr Phe Thr Asp Leu Val Pro Gly Arg Lys	
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tac atg gct aca gtc acc agt att agt gga gac tta aaa aat tcc tct	1398
Tyr Met Ala Thr Val Thr Ser Ile Ser Gly Asp Leu Lys Asn Ser Ser	
445 450 455	
tca gta aaa gga aga aca gtg cct gcc caa gtg act gac ttg cat gtg	1446
Ser Val Lys Gly Arg Thr Val Pro Ala Gln Val Thr Asp Leu His Val	
460 465 470	
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Ala Asn Gln Gly Met Thr Ser Ser Leu Phe Thr Asn Trp Thr Gln Ala	
475 480 485	
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Gln Gly Asp Val Glu Phe Tyr Gln Val Leu Leu Ile His Glu Asn Val	
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Val Ile Lys Asn Glu Ser Ile Ser Ser Glu Thr Ser Arg Tyr Ser Phe	
505 510 515 520	
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His Ser Leu Lys Ser Gly Ser Leu Tyr Ser Val Val Val Thr Thr Val	

525								530				535				
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Ser Gly Gly Ile Ser Ser Arg Gln Val Val Val Glu Gly Arg Thr Val																
540 545 550																
cct tcc agt gtg agt gga gta acg gtg aac aat tcc ggt cgt aat gac	1734															
Pro Ser Ser Val Ser Gly Val Thr Val Asn Asn Ser Gly Arg Asn Asp																
555 560 565																
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Tyr Leu Ser Val Ser Trp Leu Leu Ala Pro Gly Asp Val Asp Asn Tyr																
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685 690 695																
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Phe Val Gln Leu Val Pro Gly Arg Leu Tyr Ser Val Thr Val Thr Thr																
700 705 710																
aaa agt gga caa tat gaa gcc aat gaa caa ggg aat ggg aga aca att	2214															
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715 720 725																
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Pro Glu Pro Val Lys Asp Leu Thr Leu Arg Asn Arg Ser Thr Glu Asp																
730 735 740																
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Leu His Val Thr Trp Ser Gly Ala Asn Gly Asp Val Asp Gln Tyr Glu																
745 750 755 760																
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Ile Gln Leu Leu Phe Asn Asp Met Lys Val Phe Pro Pro Phe His Leu																
765 770 775																

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acc gcc tca gag ggg gag ctc agc tgg tac aac atc ttt ttg tac	3120
Thr Ala Ser Glu Gly 1020 Glu Leu Ser Trp Tyr 1025 Asn Ile Phe Leu Tyr 1030	
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Asn Pro Asp Gly Asn 1035 Leu Gln Glu Arg Ala 1040 Gln Val Asp Pro Leu 1045	
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Lys Met Val Ile Val 1065 Thr His Ser Gly Glu 1070 Leu Ser Asn Glu Ser 1075	
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Phe Ile Phe Gly Arg 1080 Thr Val Pro Ala Ser 1085 Val Ser His Leu Arg 1090	
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Gly Ser Asn Arg Asn 1095 Thr Thr Asp Ser Leu 1100 Trp Phe Asn Trp Ser 1105	
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Gly Arg Ile Val Tyr 1230 Gly Leu Arg Pro Gly 1235 Arg Ser Tyr Gln Phe 1240	
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Pro Ile Phe Gly Ser	Val Arg Thr Lys Pro	Asp Lys Ile Gln Asn	
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ctg cat tgc cgg cct	cag aac tcc acg gcc	att gcc tgt tct tgg	3885
Leu His Cys Arg Pro	Gln Asn Ser Thr Ala	Ile Ala Cys Ser Trp	
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atc cct cct gat tct	gac ttt gat ggt tat	agt att gaa tgc cgg	3930
Ile Pro Pro Asp Ser	Asp Phe Asp Gly Tyr	Ser Ile Glu Cys Arg	
1290	1295	1300	
aaa atg gac acc caa	gaa gtt gag ttt tcc	aga aag ctg gag aaa	3975
Lys Met Asp Thr Gln	Glu Val Glu Phe Ser	Arg Lys Leu Glu Lys	
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gaa aaa tct ctg ctc	aac atc atg atg cta	gtg ccc cat aag agg	4020
Glu Lys Ser Leu Leu	Asn Ile Met Met Leu	Val Pro His Lys Arg	
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Tyr Leu Val Ser Ile	Lys Val Gln Ser Ala	Gly Met Thr Ser Glu	
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Val Val Glu Asp Ser	Thr Ile Thr Met Ile	Asp Arg Pro Pro Pro	
1350	1355	1360	
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Pro Pro Pro His Ile	Arg Val Asn Glu Lys	Asp Val Leu Ile Ser	
1365	1370	1375	
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Lys Ser Ser Ile Asn	Phe Thr Val Asn Cys	Ser Trp Phe Ser Asp	
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Thr Asn Gly Ala Val	Lys Tyr Phe Thr Val	Val Val Arg Glu Ala	
1395	1400	1405	
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Asp Gly Ser Asp Glu	Leu Lys Pro Glu Gln	Gln His Pro Leu Pro	
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Ser Tyr Leu Glu Tyr	Arg His Asn Ala Ser	Ile Arg Val Tyr Gln	
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Thr Asn Tyr Phe Ala	Ser Lys Cys Ala Glu	Asn Pro Asn Ser Asn	
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Ser Lys Ser Phe Asn	Ile Lys Leu Gly Ala	Glu Met Glu Ser Leu	
1455	1460	1465	
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Gly Gly Lys Cys Asp	Pro Thr Gln Gln Lys	Phe Cys Asp Gly Pro	

	1470	1475	1480	
	ctg aag cca cac act gcc tac aga atc agc att cga gct ttt aca			4515
	Leu Lys Pro His Thr Ala Tyr Arg Ile Ser Ile Arg Ala Phe Thr			
	1485	1490	1495	
	cag ctc ttt gat gag gac ctg aag gaa ttc aca aag cca ctc tat			4560
	Gln Leu Phe Asp Glu Asp Leu Lys Glu Phe Thr Lys Pro Leu Tyr			
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	tca gac aca ttt ttt tct tta ccc atc act act gaa tca gag ccc			4605
	Ser Asp Thr Phe Phe Ser Leu Pro Ile Thr Thr Glu Ser Glu Pro			
	1515	1520	1525	
	ttg ttt gga gct att gaa ggt gtg agt gct ggt ctg ttt tta att			4650
	Leu Phe Gly Ala Ile Glu Gly Val Ser Ala Gly Leu Phe Leu Ile			
	1530	1535	1540	
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	Gly Met Leu Val Ala Val Val Ala Leu Leu Ile Cys Arg Gln Lys			
	1545	1550	1555	
	gtg agc cat ggt cga gaa aga ccc tct gcc cgt ctg agc att cgt			4740
	Val Ser His Gly Arg Glu Arg Pro Ser Ala Arg Leu Ser Ile Arg			
	1560	1565	1570	
	agg gat cga cca tta tct gtc cac tta aac ctg ggc cag aaa ggt			4785
	Arg Asp Arg Pro Leu Ser Val His Leu Asn Leu Gly Gln Lys Gly			
	1575	1580	1585	
	aac cgg aaa act tct tgt cca ata aaa ata aat cag ttt gaa ggg			4830
	Asn Arg Lys Thr Ser Cys Pro Ile Lys Ile Asn Gln Phe Glu Gly			
	1590	1595	1600	
	cat ttc atg aag cta cag gct gac tcc aac tac ctt cta tcc aag			4875
	His Phe Met Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser Lys			
	1605	1610	1615	
	gaa tac gag gag tta aaa gac gtg ggc cga aac cag tca tgt gac			4920
	Glu Tyr Glu Glu Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp			
	1620	1625	1630	
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	Ile Ala Leu Leu Pro Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn			
	1635	1640	1645	
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	Ile Leu Pro Tyr Asp Ala Thr Arg Val Lys Leu Ser Asn Val Asp			
	1650	1655	1660	
	gat gat cct tgc tct gac tac atc aat gcc agc tac atc cct ggc			5055
	Asp Asp Pro Cys Ser Asp Tyr Ile Asn Ala Ser Tyr Ile Pro Gly			
	1665	1670	1675	
	aac aac ttc aga aga gaa tac att gtc act cag gga ccg ctt cct			5100
	Asn Asn Phe Arg Arg Glu Tyr Ile Val Thr Gln Gly Pro Leu Pro			
	1680	1685	1690	
	ggc acc aag gat gac ttc tgg aaa atg gtg tgg gaa caa aac gtt			5145
	Gly Thr Lys Asp Asp Phe Trp Lys Met Val Trp Glu Gln Asn Val			
	1695	1700	1705	

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His Asn Ile Val Met Val Thr Gln Cys Val Glu Lys Gly Arg Val	
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Lys Cys Asp His Tyr Trp Pro Ala Asp Gln Asp Ser Leu Tyr Tyr	
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Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser Val Leu Pro Glu	
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Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu Gln Leu Asp	
1755 1760 1765	
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Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp Pro Asp	
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His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val Arg	
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Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr	
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Val Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe Ile	
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Ala Leu Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val	
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gac att tat gga gca gtg cac gac cta aga ctt cac agg gtt cac	5595
Asp Ile Tyr Gly Ala Val His Asp Leu Arg Leu His Arg Val His	
1845 1850 1855	
atg gtc cag act gag tgt cag tat gtc tac cta cat cag tgt gta	5640
Met Val Gln Thr Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val	
1860 1865 1870	
aga gat gtc ctc aga gca aga aag cta ccg agt gaa caa gaa aac	5685
Arg Asp Val Leu Arg Ala Arg Lys Leu Arg Ser Glu Gln Glu Asn	
1875 1880 1885	
ccc ttg ttt cca atc tat gaa aat gtg aat cca gag tat cac aga	5730
Pro Leu Phe Pro Ile Tyr Glu Asn Val Asn Pro Glu Tyr His Arg	
1890 1895 1900	
gat cca gtc tat tca agg cat tga gaatgtacct gaagagctcc tggataaaaa	5784
Asp Pro Val Tyr Ser Arg His	
1905	
ttattcactg tgtgatttgt ttttaaaaac ttgcttcatg ccctacagag gtgccagcta	5844
tttctgttga tactatgtat aatttattaa tctggagaat gtntaaaant ntatataatt	5904

taaaggtaac agatattatt gtacatagtt gtatTTTtGta gTTTcttctg taaatatgta 5964  
 ttttttcata atgtttaata ttaagcttta tataatacta tttttcacac taaaaaaaaa 6024  
 aaaaaaaaaa 6033

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<400> 15

Met Leu Ser His Gly Ala Gly Leu Ala Leu Trp Ile Thr Leu Ser Leu  
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Leu Gln Thr Gly Leu Ala Glu Pro Glu Arg Cys Asn Phe Thr Leu Ala  
 20 25 30

Glu Ser Lys Ala Ser Ser His Ser Val Ser Ile Gln Trp Arg Ile Leu  
 35 40 45

Gly Ser Pro Cys Asn Phe Ser Leu Ile Tyr Ser Ser Asp Thr Leu Gly  
 50 55 60

Ala Ala Leu Cys Pro Thr Phe Arg Ile Asp Asn Thr Thr Tyr Gly Cys  
 65 70 75 80

Asn Leu Gln Asp Leu Gln Ala Gly Thr Ile Tyr Asn Phe Lys Ile Ile  
 85 90 95

Ser Leu Asp Glu Glu Arg Thr Val Val Leu Gln Thr Asp Pro Leu Pro  
 100 105 110

Pro Ala Arg Phe Gly Val Ser Lys Glu Lys Thr Thr Ser Thr Gly Leu  
 115 120 125

His Val Trp Trp Thr Pro Ser Ser Gly Lys Val Thr Ser Tyr Glu Val  
 130 135 140

Gln Leu Phe Asp Glu Asn Asn Gln Lys Ile Gln Gly Val Gln Ile Gln  
 145 150 155 160

Glu Ser Thr Ser Trp Asn Glu Tyr Thr Phe Phe Asn Leu Thr Ala Gly  
 165 170 175

Ser Lys Tyr Asn Ile Ala Ile Thr Ala Val Ser Gly Gly Lys Arg Ser  
 180 185 190



Phe Ser Val Tyr Thr Asn Gly Ser Thr Val Pro Ser Pro Val Lys Asp  
195 200 205

Ile Gly Ile Ser Thr Lys Ala Asn Ser Leu Leu Ile Ser Trp Ser His  
210 215 220

Gly Ser Gly Asn Val Glu Arg Tyr Arg Leu Met Leu Met Asp Lys Gly  
225 230 235 240

Ile Leu Val His Gly Gly Val Val Asp Lys His Ala Thr Ser Tyr Ala  
245 250 255

Phe His Gly Leu Thr Pro Gly Tyr Leu Tyr Asn Leu Thr Val Met Thr  
260 265 270

Glu Ala Ala Gly Leu Gln Asn Tyr Arg Trp Lys Leu Val Arg Thr Ala  
275 280 285

Pro Met Glu Val Ser Asn Leu Lys Val Thr Asn Asp Gly Ser Leu Thr  
290 295 300

Ser Leu Lys Val Lys Trp Gln Arg Pro Pro Gly Asn Val Asp Ser Tyr  
305 310 315 320

Asn Ile Thr Leu Ser His Lys Gly Thr Ile Lys Glu Ser Arg Val Leu  
325 330 335

Ala Pro Trp Ile Thr Glu Thr His Phe Lys Glu Leu Val Pro Gly Arg  
340 345 350

Leu Tyr Gln Val Thr Val Ser Cys Val Ser Gly Glu Leu Ser Ala Gln  
355 360 365

Lys Met Ala Val Gly Arg Thr Phe Pro Leu Ala Val Leu Gln Leu Arg  
370 375 380

Val Lys His Ala Asn Glu Thr Ser Leu Ser Ile Met Trp Gln Thr Pro  
385 390 395 400

Val Ala Glu Trp Glu Lys Tyr Ile Ile Ser Leu Ala Asp Arg Asp Leu  
405 410 415

Leu Leu Ile His Lys Ser Leu Ser Lys Asp Ala Lys Glu Phe Thr Phe  
420 425 430

Thr Asp Leu Val Pro Gly Arg Lys Tyr Met Ala Thr Val Thr Ser Ile  
 435 440 445

Ser Gly Asp Leu Lys Asn Ser Ser Ser Val Lys Gly Arg Thr Val Pro  
 450 455 460

Ala Gln Val Thr Asp Leu His Val Ala Asn Gln Gly Met Thr Ser Ser  
 465 470 475 480

Leu Phe Thr Asn Trp Thr Gln Ala Gln Gly Asp Val Glu Phe Tyr Gln  
 485 490 495

Val Leu Leu Ile His Glu Asn Val Val Ile Lys Asn Glu Ser Ile Ser  
 500 505 510

Ser Glu Thr Ser Arg Tyr Ser Phe His Ser Leu Lys Ser Gly Ser Leu  
 515 520 525

Tyr Ser Val Val Val Thr Thr Val Ser Gly Gly Ile Ser Ser Arg Gln  
 530 535 540

Val Val Val Glu Gly Arg Thr Val Pro Ser Ser Val Ser Gly Val Thr  
 545 550 555 560

Val Asn Asn Ser Gly Arg Asn Asp Tyr Leu Ser Val Ser Trp Leu Leu  
 565 570 575

Ala Pro Gly Asp Val Asp Asn Tyr Glu Val Thr Leu Ser His Asp Gly  
 580 585 590

Lys Val Val Gln Ser Leu Val Ile Ala Lys Ser Val Arg Glu Cys Ser  
 595 600 605

Phe Ser Ser Leu Thr Pro Gly Arg Leu Tyr Thr Val Thr Ile Thr Thr  
 610 615 620

Arg Ser Gly Lys Tyr Glu Asn His Ser Phe Ser Gln Glu Arg Thr Val  
 625 630 635 640

Pro Asp Lys Val Gln Gly Val Ser Val Ser Asn Ser Ala Arg Ser Asp  
 645 650 655

Tyr Leu Arg Val Ser Trp Val His Ala Thr Gly Asp Phe Asp His Tyr  
 660 665 670

Glu Val Thr Ile Lys Asn Lys Asn Asn Phe Ile Gln Thr Lys Ser Ile

675					680					685					
Pro	Lys	Ser	Glu	Asn	Glu	Cys	Val	Phe	Val	Gln	Leu	Val	Pro	Gly	Arg
690						695					700				
Leu	Tyr	Ser	Val	Thr	Val	Thr	Thr	Lys	Ser	Gly	Gln	Tyr	Glu	Ala	Asn
705					710					715					720
Glu	Gln	Gly	Asn	Gly	Arg	Thr	Ile	Pro	Glu	Pro	Val	Lys	Asp	Leu	Thr
				725					730					735	
Leu	Arg	Asn	Arg	Ser	Thr	Glu	Asp	Leu	His	Val	Thr	Trp	Ser	Gly	Ala
			740					745					750		
Asn	Gly	Asp	Val	Asp	Gln	Tyr	Glu	Ile	Gln	Leu	Leu	Phe	Asn	Asp	Met
		755					760					765			
Lys	Val	Phe	Pro	Pro	Phe	His	Leu	Val	Asn	Thr	Ala	Thr	Glu	Tyr	Arg
	770					775					780				
Phe	Thr	Ser	Leu	Thr	Pro	Gly	Arg	Gln	Tyr	Lys	Ile	Leu	Val	Leu	Thr
785					790					795					800
Ile	Ser	Gly	Asp	Val	Gln	Gln	Ser	Ala	Phe	Ile	Glu	Gly	Phe	Thr	Val
				805					810					815	
Pro	Ser	Ala	Val	Lys	Asn	Ile	His	Ile	Ser	Pro	Asn	Gly	Ala	Thr	Asp
			820					825					830		
Ser	Leu	Thr	Val	Asn	Trp	Thr	Pro	Gly	Gly	Gly	Asp	Val	Asp	Ser	Tyr
		835					840					845			
Thr	Val	Ser	Ala	Phe	Arg	His	Ser	Gln	Lys	Val	Asp	Ser	Gln	Thr	Ile
	850					855					860				
Pro	Lys	His	Val	Phe	Glu	His	Thr	Phe	His	Arg	Leu	Glu	Ala	Gly	Glu
865					870					875					880
Gln	Tyr	Gln	Ile	Met	Ile	Ala	Ser	Val	Ser	Gly	Ser	Leu	Lys	Asn	Gln
				885					890					895	
Ile	Asn	Val	Val	Gly	Arg	Thr	Val	Pro	Ala	Ser	Val	Gln	Gly	Val	Ile
			900					905					910		
Ala	Asp	Asn	Ala	Tyr	Ser	Ser	Tyr	Ser	Leu	Ile	Val	Ser	Trp	Gln	Lys
		915					920					925			

Ala Ala Gly Val Ala Glu Arg Tyr Asp Ile Leu Leu Leu Thr Glu Asn  
 930 935 940

Gly Ile Leu Leu Arg Asn Thr Ser Glu Pro Ala Thr Thr Lys Gln His  
 945 950 955 960

Lys Phe Glu Asp Leu Thr Pro Gly Lys Lys Tyr Lys Ile Gln Ile Leu  
 965 970 975

Thr Val Ser Gly Gly Leu Phe Ser Lys Glu Ala Gln Thr Glu Gly Arg  
 980 985 990

Thr Val Pro Ala Ala Val Thr Asp Leu Arg Ile Thr Glu Asn Ser Thr  
 995 1000 1005

Arg His Leu Ser Phe Arg Trp Thr Ala Ser Glu Gly Glu Leu Ser  
 1010 1015 1020

Trp Tyr Asn Ile Phe Leu Tyr Asn Pro Asp Gly Asn Leu Gln Glu  
 1025 1030 1035

Arg Ala Gln Val Asp Pro Leu Val Gln Ser Phe Ser Phe Gln Asn  
 1040 1045 1050

Leu Leu Gln Gly Arg Met Tyr Lys Met Val Ile Val Thr His Ser  
 1055 1060 1065

Gly Glu Leu Ser Asn Glu Ser Phe Ile Phe Gly Arg Thr Val Pro  
 1070 1075 1080

Ala Ser Val Ser His Leu Arg Gly Ser Asn Arg Asn Thr Thr Asp  
 1085 1090 1095

Ser Leu Trp Phe Asn Trp Ser Pro Ala Ser Gly Asp Phe Asp Phe  
 1100 1105 1110

Tyr Glu Leu Ile Leu Tyr Asn Pro Asn Gly Thr Lys Lys Glu Asn  
 1115 1120 1125

Trp Lys Asp Lys Asp Leu Thr Glu Trp Arg Phe Gln Gly Leu Val  
 1130 1135 1140

Pro Gly Arg Lys Tyr Val Leu Trp Val Val Thr His Ser Gly Asp  
 1145 1150 1155

Leu	Ser	Asn	Lys	Val	Thr	Ala	Glu	Ser	Arg	Thr	Ala	Pro	Ser	Pro
1160						1165					1170			
Pro	Ser	Leu	Met	Ser	Phe	Ala	Asp	Ile	Ala	Asn	Thr	Ser	Leu	Ala
1175						1180					1185			
Ile	Thr	Trp	Lys	Gly	Pro	Pro	Asp	Trp	Thr	Asp	Tyr	Asn	Asp	Phe
1190						1195					1200			
Glu	Leu	Gln	Trp	Leu	Pro	Arg	Asp	Ala	Leu	Thr	Val	Phe	Asn	Pro
1205						1210					1215			
Tyr	Asn	Asn	Arg	Lys	Ser	Glu	Gly	Arg	Ile	Val	Tyr	Gly	Leu	Arg
1220						1225					1230			
Pro	Gly	Arg	Ser	Tyr	Gln	Phe	Asn	Val	Lys	Thr	Val	Ser	Gly	Asp
1235						1240					1245			
Ser	Trp	Lys	Thr	Tyr	Ser	Lys	Pro	Ile	Phe	Gly	Ser	Val	Arg	Thr
1250						1255					1260			
Lys	Pro	Asp	Lys	Ile	Gln	Asn	Leu	His	Cys	Arg	Pro	Gln	Asn	Ser
1265						1270					1275			
Thr	Ala	Ile	Ala	Cys	Ser	Trp	Ile	Pro	Pro	Asp	Ser	Asp	Phe	Asp
1280						1285					1290			
Gly	Tyr	Ser	Ile	Glu	Cys	Arg	Lys	Met	Asp	Thr	Gln	Glu	Val	Glu
1295						1300					1305			
Phe	Ser	Arg	Lys	Leu	Glu	Lys	Glu	Lys	Ser	Leu	Leu	Asn	Ile	Met
1310						1315					1320			
Met	Leu	Val	Pro	His	Lys	Arg	Tyr	Leu	Val	Ser	Ile	Lys	Val	Gln
1325						1330					1335			
Ser	Ala	Gly	Met	Thr	Ser	Glu	Val	Val	Glu	Asp	Ser	Thr	Ile	Thr
1340						1345					1350			
Met	Ile	Asp	Arg	Pro	Pro	Pro	Pro	Pro	Pro	His	Ile	Arg	Val	Asn
1355						1360					1365			
Glu	Lys	Asp	Val	Leu	Ile	Ser	Lys	Ser	Ser	Ile	Asn	Phe	Thr	Val
1370						1375					1380			

Asn Cys	Ser Trp Phe Ser	Asp	Thr Asn Gly Ala Val	Lys Tyr Phe
1385		1390		1395
Thr Val	Val Val Arg Glu	Ala	Asp Gly Ser Asp Glu	Leu Lys Pro
1400		1405		1410
Glu Gln	Gln His Pro Leu	Pro	Ser Tyr Leu Glu Tyr	Arg His Asn
1415		1420		1425
Ala Ser	Ile Arg Val Tyr	Gln	Thr Asn Tyr Phe Ala	Ser Lys Cys
1430		1435		1440
Ala Glu	Asn Pro Asn Ser	Asn	Ser Lys Ser Phe Asn	Ile Lys Leu
1445		1450		1455
Gly Ala	Glu Met Glu Ser	Leu	Gly Gly Lys Cys Asp	Pro Thr Gln
1460		1465		1470
Gln Lys	Phe Cys Asp Gly	Pro	Leu Lys Pro His Thr	Ala Tyr Arg
1475		1480		1485
Ile Ser	Ile Arg Ala Phe	Thr	Gln Leu Phe Asp Glu	Asp Leu Lys
1490		1495		1500
Glu Phe	Thr Lys Pro Leu	Tyr	Ser Asp Thr Phe Phe	Ser Leu Pro
1505		1510		1515
Ile Thr	Thr Glu Ser Glu	Pro	Leu Phe Gly Ala Ile	Glu Gly Val
1520		1525		1530
Ser Ala	Gly Leu Phe Leu	Ile	Gly Met Leu Val Ala	Val Val Ala
1535		1540		1545
Leu Leu	Ile Cys Arg Gln	Lys	Val Ser His Gly Arg	Glu Arg Pro
1550		1555		1560
Ser Ala	Arg Leu Ser Ile	Arg	Arg Asp Arg Pro Leu	Ser Val His
1565		1570		1575
Leu Asn	Leu Gly Gln Lys	Gly	Asn Arg Lys Thr Ser	Cys Pro Ile
1580		1585		1590
Lys Ile	Asn Gln Phe Glu	Gly	His Phe Met Lys Leu	Gln Ala Asp
1595		1600		1605
Ser Asn	Tyr Leu Leu Ser	Lys	Glu Tyr Glu Glu Leu	Lys Asp Val

1610		1615		1620
Gly Arg Asn Gln Ser Cys Asp	Ile Ala Leu Leu Pro	Glu Asn Arg		
1625	1630	1635		
Gly Lys Asn Arg Tyr Asn Asn	Ile Leu Pro Tyr Asp	Ala Thr Arg		
1640	1645	1650		
Val Lys Leu Ser Asn Val Asp	Asp Asp Pro Cys Ser	Asp Tyr Ile		
1655	1660	1665		
Asn Ala Ser Tyr Ile Pro Gly	Asn Asn Phe Arg Arg	Glu Tyr Ile		
1670	1675	1680		
Val Thr Gln Gly Pro Leu Pro	Gly Thr Lys Asp Asp	Phe Trp Lys		
1685	1690	1695		
Met Val Trp Glu Gln Asn Val	His Asn Ile Val Met	Val Thr Gln		
1700	1705	1710		
Cys Val Glu Lys Gly Arg Val	Lys Cys Asp His Tyr	Trp Pro Ala		
1715	1720	1725		
Asp Gln Asp Ser Leu Tyr Tyr	Gly Asp Leu Ile Leu	Gln Met Leu		
1730	1735	1740		
Ser Glu Ser Val Leu Pro Glu	Trp Thr Ile Arg Glu	Phe Lys Ile		
1745	1750	1755		
Cys Gly Glu Glu Gln Leu Asp	Ala His Arg Leu Ile	Arg His Phe		
1760	1765	1770		
His Tyr Thr Val Trp Pro Asp	His Gly Val Pro Glu	Thr Thr Gln		
1775	1780	1785		
Ser Leu Ile Gln Phe Val Arg	Thr Val Arg Asp Tyr	Ile Asn Arg		
1790	1795	1800		
Ser Pro Gly Ala Gly Pro Thr	Val Val His Cys Ser	Ala Gly Val		
1805	1810	1815		
Gly Arg Thr Gly Thr Phe Ile	Ala Leu Asp Arg Ile	Leu Gln Gln		
1820	1825	1830		
Leu Asp Ser Lys Asp Ser Val	Asp Ile Tyr Gly Ala	Val His Asp		
1835	1840	1845		

Leu Arg Leu His Arg Val His Met Val Gln Thr Glu Cys Gln Tyr  
1850 1855 1860

Val Tyr Leu His Gln Cys Val Arg Asp Val Leu Arg Ala Arg Lys  
1865 1870 1875

Leu Arg Ser Glu Gln Glu Asn Pro Leu Phe Pro Ile Tyr Glu Asn  
1880 1885 1890

Val Asn Pro Glu Tyr His Arg Asp Pro Val Tyr Ser Arg His  
1895 1900 1905

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<400> 16

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Arg Lys Thr Ser Cys Pro Ile Lys Ile Asn Gln Phe Glu Gly His Phe  
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Met Lys Leu Gln Ala Asp Ser Asn Tyr Leu Leu Ser Lys Glu Tyr Glu  
35 40 45

Glu Leu Lys Asp Val Gly Arg Asn Gln Ser Cys Asp Ile Ala Leu Leu  
50 55 60

Pro Glu Asn Arg Gly Lys Asn Arg Tyr Asn Asn Ile Leu Pro Tyr Asp  
65 70 75 80

Ala Thr Arg Val Lys Leu Ser Asn Val Asp Asp Asp Pro Cys Ser Asp  
85 90 95

Tyr Ile Asn Ala Ser Tyr Ile Pro Gly Asn Asn Phe Arg Arg Glu Tyr  
100 105 110

Ile Val Thr Gln Gly Pro Leu Pro Gly Thr Lys Asp Asp Phe Trp Lys  
115 120 125

Met Val Trp Glu Gln Asn Val His Asn Ile Val Met Val Thr Gln Cys  
130 135 140



Val Glu Lys Gly Arg Val Lys Cys Asp His Tyr Trp Pro Ala Asp Gln  
145 150 155 160

Asp Ser Leu Tyr Tyr Gly Asp Leu Ile Leu Gln Met Leu Ser Glu Ser  
165 170 175

Val Leu Pro Glu Trp Thr Ile Arg Glu Phe Lys Ile Cys Gly Glu Glu  
180 185 190

Gln Leu Asp Ala His Arg Leu Ile Arg His Phe His Tyr Thr Val Trp  
195 200 205

Pro Asp His Gly Val Pro Glu Thr Thr Gln Ser Leu Ile Gln Phe Val  
210 215 220

Arg Thr Val Arg Asp Tyr Ile Asn Arg Ser Pro Gly Ala Gly Pro Thr  
225 230 235 240

Val Val His Cys Ser Ala Gly Val Gly Arg Thr Gly Thr Phe Ile Ala  
245 250 255

Leu Asp Arg Ile Leu Gln Gln Leu Asp Ser Lys Asp Ser Val Asp Ile  
260 265 270

Tyr Gly Ala Val His Asp Leu Arg Leu His Arg Val His Met Val Gln  
275 280 285

Thr Glu Cys Gln Tyr Val Tyr Leu His Gln Cys Val Arg Asp Val Leu  
290 295 300

Arg Ala Arg Lys Leu Arg Ser Glu Gln His His His His His His  
305 310 315

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<211> 25  
<212> DNA  
<213> Homo sapiens

<400> 17  
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25